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Claims

[c1] A sound attenuation material which comprises; A Lattice structure; said lattice structure comprising a substantially continuous framework; said framework having vacant and non vacant cavities; said structure further chemically or mechanically retaining a plurality of mechanisms for altering, attenuating, reflecting, or absorbing sound; material further comprising Projection surfaces mechanisms for projecting acoustical waves towards absorbing or attenuating means; further said projection mechanisms being retained by said lattice structure material further comprising Absorber or attenuation means

[c2] A sound attenuation material as in claim 1 where lattice structure is primarily resin based

[c3] A sound attenuation material as claimed in claim 1 where said lattice structure is completely inorganic in composition

[c4] An article of manufacture as claimed in claim 1 where said lattice structure is reinforced with thermal conduction means.

[c5] A sound attenuation material as claimed in claim 1 where Said Projection surfaces are composed of a a plurality of plate like ceramic particles selected from the group of platelet clays, platelet talcs, mica, or plate like zirconium carbide.

[c6] A sound attenuation material as claimed in claim 1 where said projection surfaces are composed of one of the following group: platelet clays, platelet talcs, mica, or other ceramic particles available in platelet form.

[c7] A sound attenuation material as claimed in claim 1 where said absorber means comprises ceramic microspheres;

[c8] A sound attenuation material as claimed in claim 7 where said absorber means additionally comprising extended stub tuning apparatus where such stub tuners are extended into vacant areas defined within said lattice structure; said stub tuners further being non uniform in extended length

[c9] A sound attenuation material as claimed in claim 8 where said stub tuner means are composed of ceramic particles having a high aspect ratio in at least two of three dimensions such as rods or plates.

[c10] A sound attenuation material as claimed in claim 1where said material additionally comprising crack propagation

resistance means;

[c11] An article of manufacture as claimed in claim 10 where said crack resistance means is thermally conductive

[c12] An article of manufacture as claimed in claim 10 where said crack resistance means are electrically conductive

[c13] A sound attenuation material as claimed in claim 10 where said crack propagation resistance means consists of fibrous reinforcement; said fibrous reinforcement also possessing sound attenuation properties.

[c14] An article of manufacture as claimed in claim 1 where said lattice structure is electrically conductive

[c15] An article of manufacture as claimed in claim 1 where one or a plurality of components including the lattice, the acoustical reflectors, and the acoustical absorbers are electrically conductive

[c16] A Process for dampening sound involving the application of multiple layers of a coating comprising: for transmitting sound incident upon a surface; for Absorbing sound once it has been transmitted into the cavities of a coatings first absorbing portion; a second absorbing portion where said incoming sound is further transmitted said sound transmission surfaces being situated directly after

said second absorbing portion; Said second absorbing portion being substantially comprised of closed cell cavities in which incoming sound is damped by its own reflection and a plurality of sound attenuation media for absorbing acoustical energy;

[c17] A process for dampening sound as claimed in claim 16 where said means for transmitting sound is a porous layer of loosely bound ceramic said loosely bound ceramic forming a non continuous highly porous first coating layer.

[c18] A process for dampening sound as claimed in claim 17 wherein said non continuous highly porous first coating layer also comprises sound redirection means

[c19] A process for dampening sound as claimed in claim18 wherein said redirection means comprises plate or rod like structures;

[c20] A process for dampening sound as claimed in claim 19 wherein said plate or rod like structures substantially act as sympathetic resonators

[c21] A process for dampening sound as claimed in claim 18 wherein said plate or rod like structures substantially perform a baffling function.

[c22] A process for dampening sound as claimed in claim 18 where said plate or rod like structures are comprised of various forms of plate like kaolin and talc.

[c23] A process for dampening sound as claimed in claim 16 where said means for absorbing sound in said first absorbing portion is effected by the use of hollow ceramic particles as resonant cavities.

[c24] A process for dampening sound as claimed in claim 16 where said means for absorbing sound in said first absorbing portion is effected by the use of baffles formed by the positioning within said transmission means of particles performing a baffling function.

[c25] A process for dampening sound as claimed in claim 16 where said second absorbing portion is comprised of a porous structure with adhesive bonding means substantially integral with network formation means; said adhesive bonding means causing attachment of said second absorbing layer to a surface;

[c26] A process for dampening sound as claimed in 24 where said surface is required to be acoustically reflective;

[c27] A process for dampening sound as claimed in claim 24 where said surface may additionally provide sound attenuation means;

[c28] A process for dampening sound as claimed in claim 16 where said second absorbing layer is comprised of any number of a plurality of substantially equivilent layers;

[c29] A Process as claimed in claim 16 where said lattice work enables the damping of sound in a hot gas environment

[c30] A process as claimed in claim 16 where one or a plurality of components including the lattice, the acoustical reflectors, and the acoustical absorbers exhibit electrical conductivity.

[c31] A process as claimed in claim 16 where the process additionally involves the resistance of mildew growth by application means which retains sufficient porosity to enable a permeability rating.

[c32] A process as claimed in claim 16 wherein the process additionally involves a resistance to flame spread

[c33] A process as claimed in claim 16 wherein said incident acoustical energy is alternately transformed into electrical energy through the auspices of a piezoelectric material such as barium titanate.